

**REMARKS**

This Amendment is submitted in response to the outstanding Office Action, dated December 20, 2005. The present application was filed on December 18, 2001 with claims 1-21. Claims 5-8 and 11-20 have been previously cancelled, without  
5 prejudice. Claims 1-4, 9-10, and 21-25 are presently pending in the above-identified patent application. In this response, Applicants propose to amend claims 1, 2, 4, 21 and 25. Claims 26 through 34 are proposed to be added. No additional fee is due (there are 20 total claims and 3 independent claims pending following entry of the present amendment).

10 In the Office Action, the Examiner has objected to the drawings. The Examiner rejected claim 2 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner rejected claims 1-4, 9, 10 and 21-25 under 35 U.S.C. §103(a) as being unpatentable over Eyuboglu (United States Patent No.  
15 4,713,829) in view of Kim (United States Patent No. 5,963,592).

**Drawings**

The Examiner has renewed an objection to the drawings that was first raised in an earlier Office Action, mailed July 28, 2004. In particular, the Examiner previously objected to “smudged” handwriting. Applicants are resubmitting formal  
20 drawings herewith, that reflect previously submitted amendments and which do not contain any handwriting. Entry of the formal drawings is respectfully requested.

**Section 112 Rejection**

The Examiner rejected claim 2 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject  
25 matter which Applicant regards as the invention. The Examiner asserts that the term “associated with” is indefinite. Claim 2 has been amended in accordance with the Examiner’s suggestion, and Applicants respectfully request withdrawal of the Section 112 rejection.

**Section 103 Rejection**

30 The Examiner rejected claims 1-4, 9, 10 and 21-25 under 35 U.S.C. §103(a) as being unpatentable over Eyuboglu in view of Kim. With regard to claims 1

and 21, for example, the Examiner asserts that Eyuboglu teaches compensating for intersymbol interference caused by previously decoded multidimensional code symbols; and compensating for intrasymbol interference caused by symbol components within a current multidimensional code symbol.

5           The Examiner acknowledges that Eyuboglu does not explicitly teach the use of taking specific compensatory actions for intrasymbol interference. The Examiner asserts, however, that Kim teaches compensation for intrasymbol interference.

          Independent claims 1 and 21 have been amended to emphasize that the intersymbol interference caused by previously transmitted multidimensional code  
10   symbols is compensated for *by calculating intersymbol interference estimates based on one or more multidimensional code symbols*. Eyuboglu, on the other hand, employs noise prediction to compensate for intersymbol interference. Further, in Eyuboglu, the intersymbol interference is compensated for based on a lowest dimension tentative decision for a prior symbol interval, and not based on multidimensional code symbols.  
15   See, for example, the equation at col. 11, line 60, where  $r_{2, \text{old}}$  is the prior received signal, and  $C_{2, \text{old}}$  is the tentative 2D decision for the prior interval.

          If Eyuboglu was compensating for intersymbol interference in a system employing a multidimensional code based on *one or more multidimensional code symbols*, as required by independent claims 1 and 21, then both  $C_{1, \text{old}}$  and  $C_{2, \text{old}}$  would be  
20   present in this equation.  $C_{2, \text{old}}$  is the tentative decision for the prior interval of lowest dimensionality. Eyuboglu discloses a system employing a 4D code, and therefore would have to disclose compensating for intersymbol interference based on one or more 4D code symbols. Thus, Eyuboglu does not disclose or suggest compensating for intersymbol interference “*by calculating intersymbol interference estimates based on one*  
25   *or more multidimensional code symbols,*” wherein “multidimensional code symbol comprises a number of symbol components of lower dimensionality.”

          Likewise, Kim is not directed to a coded system. Thus, Kim does not disclose or suggest compensating for intersymbol interference within multidimensional code symbols.

30           Thus, Applicants respectfully request withdrawal of the Section 103 rejection.

### Dependent Claims 2-4, 9-10 and 22-25

Dependent claims 2-4 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Eyuboglu in view of Kim. Claims 2-4, 9-10, and 22-25 are dependent on claim 1 and are therefore patentably distinguished over Eyuboglu and Kim (alone or in combination) because of their dependency from independent claim 1 for the reasons set forth above, as well as other elements these claims add in combination to their base claim.

For example, with regard to claim 22, the Examiner asserts that Eyuboglu discloses predictor coefficients that are metrics that use previous surviving received signals  $r_{1, \text{old}}$  and  $r_{2, \text{old}}$ .  $r_{1, \text{old}}$  and  $r_{2, \text{old}}$  are previous received signals (col. 11, lines 9-18), not survivor symbols. Eyuboglu does not define nor introduce the terms “surviving received signals” or “surviving received symbols” and these terms are also not defined in the art. The term “survivor symbols” is however clearly defined in the Specification, page 9, lines 20-26, as symbols that form the survivor path. Therefore, Eyuboglu, does not use “survivor symbols from a corresponding state,” as required by claim 22.

With regard to claim 23, the Examiner asserts that  $r_{1, \text{old}}$  and  $r_{2, \text{old}}$  are surviving symbols.  $r_{1, \text{old}}$  and  $r_{2, \text{old}}$ , however, are previous received signal and not survivor symbols. Generally, a survivor symbol is a symbol belonging to the survivor path into a state, as would be apparent to a person of ordinary skill in the art. Survivor symbols are also defined as such in the Specification at page 9, lines 20-26. Further,  $r_{1, \text{new}}$  and  $r_{2, \text{new}}$  are not data estimates, but currently received signals as defined in col. 11, line 9-18.

### New Claims

New claims 26-34 have been added to more particularly point out and distinctly claim various features of the invention, consistent with the scope of the originally filed specification, in order to give applicants the protection to which they are entitled. No new matter has been introduced. For example, new claim 26 recites the calculation of an ISI-free estimate using at least one survivor symbol. Support for this feature is found in the original specification at page 9, line 20 through page 10, line 13. New claim 33 recites an "A system for decoding a multidimensional code ..." Support for this feature is found, for example, in claim 1 and Figure 5 of the originally filed

specification.

Conclusion

All of the pending claims following entry of the amendments, i.e., claims 1-4, 9-10, and 21-34, are in condition for allowance and such favorable action is earnestly  
5 solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

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Respectfully submitted,



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